Space Weather Forecast

Issued on Thursday, 21 September 2023 at 01:16 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Chance of further minor geomagnetic storms from late Day 2 (22 Sep) onwards. Isolated R1-R2 Minor/Moderate Radio Blackouts likely throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate over the past 24 hours. A Moderate-class flare was observed from the largest and most complex sunspot region on the visible disc, situated in the northeast. There are twelve sun spot regions visible, with most of the other regions remaining relatively stable with little change observed.

A coronal mass ejection (CME) that departed the Sun towards the southeast on 19 Sep may give a glancing blow to Earth early on Day 3 (23 Sep). A second CME associated with the Moderate-flare mentioned above departed the Sun towards the southeast on 20 Sep, and is undergoing analysis for any Earth-directed impacts.

Solar Wind / Geomagnetic Activity: Solar winds showed a steady decline over the past 24hrs, from initially elevated levels at the start of the period, down to slightly elevated levels currently. The Interplanetary Magnetic Field (IMF) was at weak to moderate levels. The important north-south component remained at weak and variable levels. Geomagnetic activity was at Quiet to Active levels (Kp2-4).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be Low to Moderate, with further isolated Moderate flares likely each day of the forecast period.

Solar Wind / Geomagnetic Activity: Solar winds likely at slightly elevated levels and easing as Earth comes out of fast wind and CME influences from past couple of days. Another period of fast winds is likely during the period, arriving late Day 2 into Day 3 (22-23 Sep). Generally Quiet to Unsettled (Kp2-3) conditions expected at first, perhaps with a slight chance for Active intervals (Kp4). From late Day 2/early Day 3 (22-23 Sep), Active levels (Kp4) of geomagnetic activity look likely due to the onset of the fast wind mentioned, as well as possible influence of a glancing CME, with a chance of G1 Minor Storm intervals (Kp5).

Energetic Particles / Solar Radiation: No solar radiation storms are expected, with only a slight chance of an enhancement should any larger flares occur.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.

Met Office

Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	30	40	20
Strong	G3	No	1	5	5	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	60	60	60	60
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.